Report No. FAA-RD-70-58

TABLES OF RUNWAY VISUAL RANGE VALUES
AS A FUNCTION OF
TRANSMITTANCE AND VARIOUS VALUES OF
PILOT'S ILLUMINANCE THRESHOLD AND LIGHT TARGETS

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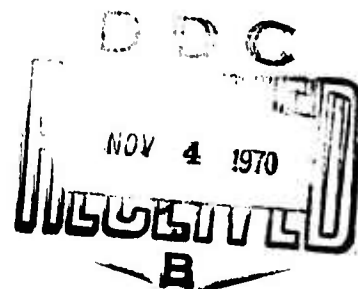
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16. Abstract

Values of Runway Visual Range (RVR) have been developed for various atmospheric transmittances utilizing Allard's Law and Koschmieder's Law. Commonly employed constant's of pilot's contrast threshold and visual illuminance threshold are utilized in the appropriate RVR equations. Computations are based on a 250 foot baseline transmissometer with light target intensities of 10,000, 2,000 and 400 candela, values which are presently used in the United States. Information is presented in tabular form showing transmittances corresponding to runway visual range readings from 600 feet to 7000 feet in 50 foot increments. Each table includes data for each of the three light target intensities. A total of eight tables is provided. The computer program which was utilized to develop each set of data is included with each table.

17. Key Words		18. Distribution Statement
Runway Visual Range	Pilot's Contrast	Availability is unlimited. Document may be released to the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151, for sale to the public .
Transmittance	Threshold	
Allard's Law	Visual Illuminance	
Kochmieder's Law	Threshold	
Visual Thresholds		

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Runway Visual (RVR) Tables Computed with Constants Noted Below

TABLE NO.	CONDITION	CONTRAST THRESHOLD	ILLUMINANCE THRESHOLD IN MILE CANDLES	
I	DAY	0.055	1000	9
II	NIGHT		2	17
III	DAY	0.050	1000	25
IV	DAY	0.050	780	33
V	DAY	0.050	260	41
VI	NIGHT		2.6	49
VII	NIGHT		1.55	57
VIII	NIGHT		0.26	65

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INTRODUCTION

In the United States, Runway Visual Range (RVR) is a value determined normally by instruments located alongside and about 14 feet higher than the centerline of the runway and calibrated with reference to the sighting of high intensity runway lights or the visual contrast of other targets -- whichever yields the greater visual range.

Under certain bright daytime conditions when the contrast of visibility markers yields a greater visual range than light targets, RVR is derived from the equation, Koschmieder's Law, which follows:

$$e = \left(t_b \right)^{v/b}$$

where

e = pilot's contrast threshold
t = atmospheric transmittance
b = path length over which transmittance is sampled
v = visual range from pilot to appropriate target (RVR)

Present United States instrumentation for CAT II runways employs a constant $e = .055$ and a path length of 250 feet.

At night and under daytime conditions when the high intensity runway edge lights are the most dominant targets for the pilot's sighting, RVR is derived from Allard's Law given by the equation:

$$Em = \frac{I(t_b)^{V/b}}{\left(\dfrac{V}{5280} \right)^2}$$

where

Em = pilot's visual illuminance threshold (mile candles)
I = intensity of light target (candela)
t = atmospheric transmittance
b = path length over which the atmospheric transmittance is sampled
V = visual range from the pilot to the appropriate target in feet

Present instrumentation in the United States for Category II runways employs the following values:

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b = 250 feet
I = 40° candela for High Intensity Light Setting 3
    2,000 candela for High Intensity Light Setting 4
    10,000 candela for High Intensity Light Setting 5

To simplify solution of the equation, it is restated as shown below. RVR is introduced as a constant, and the equation solved for atmospheric transmittance.

$$t_b = \left(\frac{Em}{I}\right)^{b/v}\left(\frac{V}{5280}\right)^{2b/v}$$

With the equipment baseline and high intensity edge light parameters determined, it is evident that for a given atmospheric transmittance, the resulting runway visual range values will be a function of the value assigned to the pilot's visual illuminance threshold, Em, when Allard's Law is utilized and to the pilot's contrast threshold when Koschmieder's Law is employed. A listing of pilot's visual illuminance threshold currently used by several states as reported in Appendix E to AN 10/11.5-57/180 dated 13 November 1967 follows:

Threshold Values used by Different States

	Illuminance Threshold In Lumens/ Square Meter		Illuminance Threshold In Mile Candles	
	Day	Night	Day	Night
State				
Denmark	1×10^{-4}	1×10^{-7} to 2×10^{-6}	260	0.26 to 5.18
France	1×10^{-4}	1×10^{-6}	260	2.6
Germany (Federal Republic)	3×10^{-4}	1×10^{-7}	780	0.26
Japan	3.9×10^{-4}	7.7×10^{-7}	1000	2
Netherlands	3×10^{-4}	6×10^{-6}	780	1.55
USA	3.9×10^{-4}	7.7×10^{-7}	1000	2

For conversion purposes 1 mile candle = 3.85×10^{-7} lumens/sq. meter. Pilot's Contrast Threshold .055 and .050 are commonly used.

The following tables report the various RVR obtained when commonly utilized constants for pilot's contrast threshold and pilot's visual illuminance threshold are inserted in the visibility equations. The computer program

utilized in the preparation of each set of tables is also attached for informational purposes. While the value of transmittance is derived to a degree of accuracy which is not obtainable in real life conditions, the data is provided for purposes of information.

Data runs were made for the following data sets which represent a spread of the constants used by the various countries:

Pilot's Contrast Threshold	Pilot's Illuminance Threshold In Mile Candles
.055	1000
.050	1000
.050	780
.050	260
.055	2.0
.050	2.6
.050	1.55
.050	0.26

TABLE I

Runway Visual Range (RVR) Conversion Table
Computed with Constants used in
the United States

Day Conditions

Pilot's Contrast Threshold = 0.055

Pilot's Illuminance Threshold = 1000 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas.

Note: The term E-02 following the value of atmospheric transmittance
        indicates $\times 10^{-2}$.

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RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

COMPUTED WITH CONSTANTS USED IN
THE UNITED STATES

CONSTANTS USED IN CALCULATIONS:
        KOSCHMIEDER'S LAW CONSTANTS:
                PILOT'S VISUAL THRESHOLD = 0.055
                TRANSMISSOMETER BASELINE = 250'

        ALLARD'S LAW CONSTANTS:
                TRANSMISSOMETER BASELINE = 250'
                PILOT'S ILLUMINANCE THRESHOLD = 1000 MILE CANDLES

DAY CONDITIONS

        L.S.3 =   400 CANDELAS
        L.S.4 =   2000 CANDELAS
        L.S.5 = 10000 CANDELAS

KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR
EACH SET OF CONDITIONS. THE EQUATION GIVING THE
HIGHER RVR IS UTILIZED IN THE DERIVATION OF
EACH PRINTED VALUE.

| | ATMOSPHERIC TRANSMITTANCE | | |
RVR	L.S.3	L.S.4	L.S.5
600	.23918803	.12232125	6.2555347E-02
650	.2839676	.15290939	8.2337857E-02
700	.3275745	.18436477	.10376378
750	.3694862	.21607684	.1263625
800	.40398323	.24757863	.1497218
850	.42610677	.27852533	.17349433
900	.44678722	.30867143	.19739588
950	.46614013	.33784968	.22119945

1000	.48427346	.36595319	.24472764
1050	.50128689	.39292073	.26784498
1100	.51727178	.41872508	.29045052
1150	.53231144	.44336397	.31247149
1200	.54648162	.46685298	.33385769
1250	.5598511	.48922026	.35457689
1300	.57248228	.51050248	.37461102
1350	.58443179	.53074178	.39395297
1400	.59575098	.54998352	.41260416
1450	.60648652	.56827467	.43057244

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1500	.61668083	.58566253	.44787048
1550	.62637251	.60219393	.4645145
1600	.63559675	.6179146	.48052323
1650	.64438565	.63286873	.49591711
1700	.65276854	.64709879	.51071766
1750	.66077227	.66064525	.524947
1800	.66842144	.66842144	.53862746
1850	.67573862	.67573862	.55178129
1900	.68274456	.68274456	.56443045
1950	.68945835	.68945835	.57659645
2000	.69589759	.69589759	.58830023
2050	.70207853	.70207853	.59956204
2100	.70801617	.70801617	.61040146
2150	.7137244	.7137244	.62083729
2200	.71921609	.71921609	.63088759
2250	.72450318	.72450318	.64056964
2300	.72959676	.72959676	.64989994
2350	.73450715	.73450715	.65889427
2400	.73924395	.73924395	.66756763
2450	.74381611	.74381611	.67593435
2500	.74823198	.74823198	.68400805
2550	.75249937	.75249937	.69180169
2600	.75662559	.75662559	.69932758
2650	.76061746	.76061746	.70659745
2700	.76448138	.76448138	.71362242
2750	.76822337	.76822337	.72041308
2800	.77184906	.77184906	.72697949
2850	.77536376	.77536376	.7333312
2900	.77877244	.77877244	.73947728
2950	.78207981	.78207981	.74542638
3000	.78529028	.78529028	.75118669
3050	.78840803	.78840803	.75676602
3100	.79143699	.79143699	.76217178
3150	.79438088	.79438088	.76741102
3200	.79724322	.79724322	.77249047
3250	.80002732	.80002732	.77741651
3300	.80273635	.80273635	.78219521
3350	.80537327	.80537327	.78683237
3400	.80794092	.80794092	.79133351
3450	.81044198	.81044198	.79570387

3500	.812879	.812879	.79994847
3550	.81525439	.81525439	.80407209
3600	.81757045	.81757045	.80807927
3650	.81982936	.81982936	.51197436
3700	.82203322	.82203322	.81576152
3750	.824184	.824184	.81944469
3800	.82628358	.82628358	.82302765
3850	.82833377	.82833377	.82651403
3900	.83033628	.83033628	.82990728
3950	.83229276	.83229276	.83229276

4000	.83420476	.83420476	.83420476
4050	.83607379	.83607379	.83607379
4100	.83790126	.83790126	.83790126
4150	.83968855	.83968855	.83968855
4200	.84143696	.84143696	.84143696
4250	.84314775	.84314775	.84314775
4300	.84482211	.84482211	.84482211
4350	.84646119	.84646119	.84646119
4400	.84806609	.84806609	.84806609
4450	.84963786	.84963786	.84963786

4500	.85117752	.85117752	.85117752
4550	.85268605	.85268605	.85268605
4600	.85416436	.85416436	.85416436
4650	.85561337	.85561337	.85561337
4700	.85703392	.85703392	.85703392
4750	.85842686	.85842686	.85842686
4800	.85979297	.85979297	.85979297
4850	.86113301	.86113301	.86113301
4900	.86244774	.86244774	.86244774
4950	.86373785	.86373785	.86373785

5000	.86500403	.86500403	.86500403
5050	.86624694	.86624694	.86624694
5100	.86746722	.86746722	.86746722
5150	.86866546	.86866546	.86866546
5200	.86984228	.86984228	.86984228
5250	.87099822	.87099822	.87099822
5300	.87213385	.87213385	.87213385
5350	.87324969	.87324969	.87324969
5400	.87434626	.87434626	.87434626
5450	.87542404	.87542404	.87542404

5500	.87648352	.87648352	.87648352
5550	.87752516	.87752516	.87752516
5600	.87854941	.87854941	.87854941
5650	.87955668	.87955668	.87955668
5700	.88054742	.88054742	.88054742
5750	.88152201	.88152201	.88152201
5800	.88248084	.88248084	.88248084
5850	.8834243	.8834243	.8834243
5900	.88435276	.88435276	.88435276
5950	.88526656	.88526656	.88526656

6000	.88616605	.88616605	.88616605
6050	.88705157	.88705157	.88705157
6100	.88792343	.88792343	.88792343
6150	.88878196	.88878196	.88878196
6200	.88962744	.88962744	.88962744
6250	.89046018	.89046018	.89046018
6300	.89128047	.89128047	.89128047
6350	.89208858	.89208858	.89208858
6400	.89288477	.89288477	.89288477
6450	.89366931	.89366931	.89366931

6500	.89444246	.89444246	.89444246
6550	.89520446	.89520446	.89520446
6600	.89595555	.89595555	.89595555
6650	.89669596	.89669596	.89669596
6700	.89742591	.89742591	.89742591
6750	.89814564	.89814564	.89814564
6800	.89885534	.89885534	.89885534
6850	.89955523	.89955523	.89955523
6900	.90024551	.90024551	.90024551
6950	.90092638	.90092638	.90092638

```
5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTA
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19); "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24); "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
80 PRINT TAB(16); "COMPUTED WITH CONSTANTS USED IN"
90 PRINT TAB(23); "THE UNITED STATES"
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
121 PRINT TAB(10); "KOSCHMIEDER'S LAW CONSTANTS:"
122 PRINT TAB (15) ; "PILOT'S VISUAL THRESHOLD = 0.055"
123 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
124 PRINT " "
125 PRINT TAB (10) ; "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB (15); "PILOT'S ILLUMINANCE THRESHOLD = 1000 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30); "DAY CONDITIONS"
135 PRINT " "
140 PRINT TAB(15); "L.S.3 =    400 CANDELAS"
150 PRINT TAB (15);"L.S.4 =   2000 CANDELAS"
160 PRINT TAB(15) ; "L.S.5 = 10000   ANDELAS"
162 PRINT " "
163 PRINT "KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR"
164 PRINT "EACH SET OF CONDITIONS. THE EQUATION GIVING THE"
165 PRINT "HIGHER RVR IS UTILIZED IN THE DERIVATION OF"
166 PRINT "EACH PRINTED VALUE."
170 PRINT " "
180 PRINT " "
190 PRINT"-------------------------------------------------------------U
200 PRINT " "
210 PRINT TAB(30); "ATMOSPHERIC TRANSMITTANCE"
220 PRINT TAB(6); "RVR" TAB(18); "L.S.3"; TAB(39);"L.S.4";TAB(59);"L.S.5
230 PRINT" "
240 PRINT"-------------------------------------------------------------U
250 PRINT " "
260 READ E,B
270 DATA 1000,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284PRINT " "
285 PRINT"-------------------------------------------------------------U
286PRINT " "
```

```
290 T1 = ((((E/400)↑(B/V))*((V/5280)↑((B*2)/V)))
300 T2 = ((((E/2000)↑(B/V))*((V/5280)↑((B*2)/V)))
310 T3 = ((((E/10000)↑(B/V))*((V/5280)↑((B*2)/V)))
320 T4=(0.055)↑(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAE(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1;TAB(35);T4;TAB(55);T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 650
620 PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```

TABLE II

Runway Visual Range (RVR) Conversion Table
Computed with Constants used in
the United States

Night Conditions

Pilot's Illuminance Threshold 2.0 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas

Note: The term E-03 following the value at atmospheric transmittance indicates $X10^{-03}$. Similary, E-02 indicates $X10^{-2}$.

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RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

COMPUTED WITH CONSTANTS USED IN
THE UNITED STATES

CONSTANTS USED IN CALCULATIONS:

ALLARD'S LAW CONSTANTS:
TRANSMISSOMETER BASELINE = 250'
PILOT'S ILLUMINANCE THRESHOLD = 2.0 MILE CANDLES

NIGHT CONDITIONS

L.S.3 =   400 CANDELAS
L.S.4 = 2000 CANDELAS
L.S.5 = 10000 CANDELAS

| RVR | ATMOSPHERIC TRANSMITTANCE | | |
	L.S.3	L.S.4	L.S.5
600	1.7954305E-02	9.1818692E-03	4.6956271E-03
650	2.6013776E-02	1.4007763E-02	7.5428275E-03
700	3.5595264E-02	2.003365E-02	1.1275295E-02
750	4.6552344E-02	2.7223976E-02	1.5920678E-02
800	5.8710146E-02	3.5504634E-02	2.1471229E-02
850	7.1883533E-02	4.4776485E-02	2.7891417E-02
900	8.5889659E-02	5.4926578E-02	3.5125637E-02
950	.10055593	6.583673E-02	4.3105112E-02

1000	.11572456	7.7389677E-02	5.1753596E-02
1050	.13125457	8.9473213E-02	6.0991821E-02
1100	.1470224	.10198274	7.0740787E-02
1150	.16292127	.1148227	8.0924083E-02
1200	.17886009	.12790711	9.1469428E-02
1250	.19476209	.1411596	.10230961
1300	.2105632	.15451305	.11338297
1350	.22621057	.16790901	.12463359
1400	.24166114	.18129705	.1360112
1450	.25688025	.19463397	.14747098

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18

1500	.27184047	.20788306	.15897327
1550	.28652052	.22101341	.17048312
1600	.30090434	.23399921	.18197022
1650	.31498026	.24681911	.19340791
1700	.32874029	.25945571	.20477339
1750	.34217953	.27189497	.21604702
1800	.35529564	.28412583	.22721214
1850	.36808838	.29613974	.2382546
1900	.38055925	.30793038	.24916257
1950	.39271116	.31949327	.25992627
2000	.40454819	.33082553	.27053766
2050	.4160753	.34192565	.28099007
2100	.42729817	.35279329	.29127924
2150	.43822307	.36342906	.30140057
2200	.44885665	.3738344	.31135142
2250	.4592059	.38401141	.32112994
2300	.469278	.39396278	.33073503
2350	.47908026	.40369165	.34016628
2400	.48862008	.41320154	.34942386
2450	.49790485	.42249628	.35850846
2500	.50694193	.4315799	.3674212
2550	.51573862	.44045666	.37616355
2600	.52430212	.44913093	.38473731
2650	.53263952	.45760717	.39314454
2700	.54075774	.4658899	.40138751
2750	.54866358	.4739837	.40946867
2800	.55636367	.48189312	.41739063
2850	.56386446	.48962272	.42515669
2900	.57117222	.49717702	.4327677
2950	.57829306	.50456048	.44022883
3000	.58523288	.51177753	.44754192
3050	.59199743	.51883253	.45471007
3100	.59859225	.52572973	.46173627
3150	.60502272	.53247335	.4686235
3200	.61129404	.53906748	.47537474
3250	.61741123	.54551614	.48199294
3300	.62337915	.55182326	.48848106
3350	.62920248	.55799266	.49484199
3400	.63488576	.56402809	.50107862
3450	.64043334	.56993317	.5071938

3500	.64584946	.57571146	.5131903
3550	.65113817	.58136638	.51907089
3600	.65630341	.58690131	.52483827
3650	.66134896	.59231948	.53049508
3700	.66627847	.59762407	.53604392
3750	.67109547	.60281814	.54148734
3800	.67580336	.60790467	.54682783
3850	.68040542	.61288656	.55206783
3900	.68490481	.61776663	.55720971
3950	.68930457	.62254758	.5622558

4000	.69360766	.62723207	.56720837
4050	.69781691	.63182266	.57206964
4100	.70193507	.63632182	.57684176
4150	.70596477	.64073198	.58152686
4200	.70990857	.64505547	.58612697
4250	.71376894	.64929456	.59064411
4300	.71754824	.65345143	.59508023
4350	.72124878	.65752823	.59943723
4400	.72487277	.66152701	.60371696
4450	.72842235	.66544978	.60792123

4500	.7318996	.66929848	.61205179
4550	.73530649	.67307499	.61611036
4600	.73864498	.67678114	.62009859
4650	.74191691	.68041869	.62401812
4700	.7451241	.68398937	.62787052
4750	.74826828	.6874948 3	.63165733
4800	.75135114	.6909367	.63538004
4850	.7543743	.69431653	.63904012
4900	.75733935	.69763585	.64263896
4950	.76024781	.70089613	.6461 7797

5000	.76310115	.7040988	.64965847
5050	.76590079	.70724525	.65308178
5100	.76864812	.71033683	.65644916
5150	.77134448	.71337485	.65976187
5200	.77399116	.71636057	.66302109
5250	.77658941	.71929522	.66622801
5300	.77914044	.72218001	.66938377
5350	.78164544	.72501609	.67248948
5400	.78410553	.7278046	.67554623
5450	.78652184	.73054663	.67855506

5500	.78889541	.73324324	.68151701
5550	.7912273	.73589547	.6844330?
5600	.79351851	.73850432	.68730424
5650	.79577001	.74107078	.69013142
5700	.79798274	.74359579	.6929156
5750	.80015764	.74608027	.69565763
5800	.80229558	.74852513	.69835841
5850	.80439743	.75093122	.70101873
5900	.80646404	.75329942	.70363958
5950	.8084962	.75563053	.70622162

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6000	.81049472	.75792536	.7087657
6050	.81246037	.7601847	.71127258
6100	.81439387	.7624093	.71374302
6150	.81629598	.76459991	.71617775
6200	.81816737	.76675723	.71857749
6250	.82000675	.76889196	.72094292
6300	.82182077	.77097484	.72327474
6350	.82360407	.77303647	.72557361
6400	.8253593	.77506751	.72784016
6450	.82708705	.7770686	.73007504

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6500	.82878793	.77904035	.73227885
6550	.8304625	.78098336	.7344522
6600	.83211133	.78289821	.73659568
6650	.83373498	.78478547	.73870984
6700	.83533396	.78664569	.74079526
6750	.8369088	.78847941	.74285248
6800	.83846	.79028715	.74488203
6850	.83998806	.79206944	.74688442
6900	.84149344	.79382676	.74886017
6950	.84297662	.7955596	.75080977

- -

```
5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTABLES
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19)J "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24)J "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
80 PRINT TAB(16)J"COMPUTED WITH CONSTANTS USED IN"
90 PRINT TAB(23)J"THE UNITED STATES"
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
124 PRINT " "
125 PRINT TAB (10) J "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15)J "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB(15)J "PILOT'S ILLUMINANCE THRESHOLD = 2.0 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30)J "NIGHT CONDITIONS"
135 PRINT " "
140 PRINT TAB(15)J "L.S.3 =    200. CANDELAS"
150 PRINT TAB (15)J"L.S.4 =   2000 CANDELAS"
160 PRINT TAB(15) J "L.S.5 = 10000 CANDELAS"
162 PRINT " "
180 PRINT " "
190 PRINT"----------------------------------------------------------------U
200 PRINT " "
210 PRINT TAB(30)J "ATMOSPHERIC TRANSMITTANCE"
220 PRINT TAB(6)J "RVR" TAB(18)J "L.S.3"J TAB(39)J"L.S.4"JTAB(59)J"L.S.5
230 PRINT" "
240 PRINT"----------------------------------------------------------------U
250 PRINT " "
260 READ E,B
270 DATA 2.0,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284PRINT " "
285 PRINT"----------------------------------------------------------------U
286PRINT " "
```

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```
290 T1 = (((E/400)↑(B/V))*((V/5280)↑((B*2)/V)))
300 T2 = (((E/2000)↑(B/V))*((V/5280)↑((B*2)/V)))
310 T3 = (((E/10000)↑(B/V))*((V/5280)↑((B*2)/V)))
320 T4=(0.055)↑(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1;TAB(35);T4;TAB(55);T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 650
620 PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```

TABLE III

Runway Visual Range (RVR) Conversion Table
Computed with Constants used in
the United States
with Pilot's Visual Threshold Modified

Day Conditions

Pilot's Constrast Threshold = 0.050

Pilot's Illuminance Threshold = 1000 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas

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RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

COMPUTED WITH CONSTANTS USED IN
THE UNITED STATES
(PILOT'S VISUAL THRESHOLD MODIFIED)

CONSTANTS USED IN CALCULATIONS:
        KOSCHMIEDER'S LAW CONSTANTS:
            PILOT'S VISUAL THRESHOLL = 0.050
            TRANSMISSOMETER BASELINE = 250'

        ALLARD'S LAW CONSTANTS:
            TRANSMISSOMETER BASELINE = 250'
            PILOT'S ILLUMINANCE THRESHOLD = 1000 MILE CANDLES

                    DAY CONDITIONS

            L.S.3 =   400 CANDELAS
            L.S.4 = 2000 CANDELAS
            L.S.5 = 10000 CANDELAS

KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR
EACH SET OF CONDITIONS. THE EQUATION GIVING THE
HIGHER RVR IS UTILIZED IN THE DERIVATION OF
EACH PRINTED VALUE.

| | | ATMOSPHERIC TRANSMITTANCE | |
| RVR | L.S.3 | L.S.4 | L.S.5 |

600	.23918803	.12232125	6.2555347E-02
650	.2839676	.15290939	8.2337857E-02
700	.3275745	.18436477	.10376378
750	.36840314	.21607684	.1263625
800	.39212824	.24757863	.1497218
850	.41432784	.27852533	.17349433
900	.43511372	.30867143	.19739588
950	.45459398	.33784968	.22119945

1000	.4728708	.36595319	.24472764
1050	.49003934	.39292073	.26784498
1100	.50618743	.41872508	.29045052
1150	.52139563	.44336397	.31247149
1200	.53573754	.46685298	.33385769
1250	.54928027	.48922026	.35457689
1300	.5620849	.51050248	.37461102
1350	.57420704	.53074178	.39395297
1400	.58569729	.54998352	.41260416
1450	.59660169	.56827467	.43057244

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1500	.60696223	.58566253	.44787048
1550	.61681716	.60219393	.4645145
1600	.62620144	.6179146	.48052323
1650	.63514698	.63286873	.49591711
1700	.64368302	.64368302	.51071766
1750	.65183634	.65183634	.524947
1800	.6596315	.6596315	.53862746
1850	.66709108	.66709108	.55178129
1900	.67423585	.67423585	.56443045
1950	.68108494	.68108494	.57659645

2000	.68765602	.68765602	.58830023
2050	.69396538	.69396538	.59956204
2100	.7000281	.7000281	.61040146
2150	.70585816	.70585816	.62083729
2200	.7114685	.7114685	.63088759
2250	.71687116	.71687116	.64056964
2300	.7220773	.7220773	.64989994
2350	.72709733	.72709733	.65889427
2400	.73194094	.73194094	.66756763
2450	.73661716	.73661716	.67593435

2500	.74113444	.74113444	.68400805
2550	.74550067	.74550067	.69180169
2600	.74972322	.74972322	.69932758
2650	.753809	.753809	.70659745
2700	.7577645	.7577645	.71362242
2750	.7615958	.7615958	.72041308
2800	.76530862	.76530862	.72697949
2850	.76890832	.76890832	.7333312
2900	.77239995	.77239995	.73947728
2950	.77578829	.77578829	.74542638

3000	.7790778	.7790778	.75118669
3050	.78227274	.78227274	.75676602
3100	.78537708	.78537708	.76217178
3150	.78839461	.78839461	.76741102
3200	.7913289	.7913289	.77249047
3250	.79418333	.79418333	.77741651
3300	.79696109	.79696109	.78219521
3350	.79966522	.79966522	.78683237
3400	.80229859	.80229859	.79133351
3450	.80486392	.80486392	.79570387

3500	.80736382	.80736382	.79994847
3550	.80980074	.80980074	.80407209
3600	.81217701	.81217701	.80807927
3650	.81449487	.81449487	.81197436
3700	.81675644	.81675644	.81576152
3750	.81896372	.81896372	.81896372
3800	.82111865	.82111865	.82111865
3850	.82322307	.82322307	.82322307
3900	.8252787	.8252787	.8252787
3950	.82728724	.82728724	.82728724

4000	.82925027	.82925027	.82925027
4050	.83116932	.83116932	.83116932
4100	.83304584	.83304584	.83304584
4150	.83488123	.83488123	.83488123
4200	.83667682	.83667682	.83667682
4250	.83843388	.83843388	.83843388
4300	.84015365	.84015365	.84015365
4350	.84183729	.84183729	.84183729
4400	.84348592	.84348592	.84348592
4450	.84510063	.84510063	.84510063

4500	.84668244	.84668244	.84668244
4550	.84823235	.84823235	.84823235
4600	.84975132	.84975132	.84975132
4650	.85124025	.85124025	.85124025
4700	.85270002	.85270002	.85270002
4750	.85413149	.85413149	.85413149
4800	.85553547	.85553547	.85553547
4850	.85691273	.85691273	.85691273
4900	.85826404	.85826404	.85826404
4950	.85959011	.85959011	.85959011

5000	.86089165	.86089165	.86089165
5050	.86216933	.86216933	.86216933
5100	.8634238	.8634238	.8634238
5150	.86465569	.86465569	.86465569
5200	.86586559	.86586559	.86586559
5250	.86705408	.86705408	.86705408
5300	.86822174	.86822174	.86822174
5350	.86936911	.86936911	.86936911
5400	.8704967	.8704967	.8704967
5450	.87160502	.87160502	.87160502

5500	.87269456	.87269456	.87269456
5550	.8737658	.8737658	.8737658
5600	.87481919	.87481919	.87481919
5650	.87585517	.87585517	.87585517
5700	.87687417	.87687417	.87687417
5750	.87787661	.87787661	.87787661
5800	.87886287	.87886287	.87886287
5850	.87983336	.87983336	.87983336
5900	.88078844	.88078844	.88078844
5950	.88172849	.88172849	.88172849
6000	.88265384	.88265384	.88265384
6050	.88356484	.88356484	.88356484
6100	.88446183	.88446183	.88446183
6150	.88534512	.88534512	.88534512
6200	.88621503	.88621503	.88621503
6250	.88707185	.88707185	.88707185
6300	.88791588	.88791588	.88791588
6350	.8887474	.8887474	.8887474
6400	.88956669	.88956669	.88956669
6450	.89037402	.89037402	.89037402
6500	.89116964	.89116964	.89116964
6550	.89195381	.89195381	.89195381
6600	.89272677	.89272677	.89272677
6650	.89348876	.89348876	.89348876
6700	.89424002	.89424002	.89424002
6750	.89498076	.89498076	.89498076
6800	.89571122	.89571122	.89571122
6850	.89643159	.89643159	.89643159
6900	.89714208	.89714208	.89714208
6950	.89784291	.89784291	.89784291

```
5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTABLES
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19); "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24); "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
80 PRINT TAB(16); "COMPUTED WITH CONSTANTS USED IN"
90 PRINT TAB(23); "THE UNITED STATES"
95 PRINT TAB(14);"(PILOT'S VISUAL THRESHOLD MODIFIED)"
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
121 PRINT TAB(10); "KOSCHMIEDER'S LAW CONSTANTS:"
122 PRINT TAB (15) ; "PILOT'S VISUAL THRESHOLD = 0.050"
123 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
124 PRINT " "
125 PRINT TAB (10) ; "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB (15); "PILOT'S ILLUMINANCE THRESHOLD = 1000 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30); "DAY CONDITIONS"
135 PRINT " "
140 PRINT TAB(15); "L.S.3 =   400 CANDELAS"
150 PRINT TAB (15);"L.S.4 =  2000 CANDELAS"
160 PRINT TAB(15) ; "L.S.5 = 10000 CANDELAS"
162 PRINT " "
163 PRINT "KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR"
164 PRINT "EACH SET OF CONDITIONS. THE EQUATION GIVING THE"
165 PRINT "HIGHER RVR IS UTILIZED IN THE DERIVATION OF"
166 PRINT "EACH PRINTED VALUE."
170 PRINT " "
180 PRINT " "
190 PRINT"-----------------------------------------------------------U
200 PRINT " "
210 PRINT TAB(30); "ATMOSPHERIC TRANSMITTANCE"
220 PRINT TAB(6); "RVR" TAB(18); "L.S.3"; TAB(39);"L.S.4";TAB(59);"L.S.5
230 PRINT" "
240 PRINT"-----------------------------------------------------------U
250 PRINT " "
260 READ E,B
270 DATA 1000,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284PRINT " "
285 PRINT"-----------------------------------------------------------U
286PRINT " "
```

```
290 T1 = (((E/400)↑(B/V))*((V/5280)↑((B*2)/V)))
300 T2 = (((E/2000)↑(B/V))*((V/5280)↑((B*2)/V)))
310 T3 = (((E/10000)↑(B/V))*((V/5280)↑((B*2)/V)))
320 T4=(0.050)↑(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1; TAB(35);T4;TAB(55);T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 650
620 PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```

TABLE IV

Runway Visual Range (RVR) Conversion Table
Computed with Modified Constants

Day Conditions

Pilot's Contrast Threshold = 0.050

Pilot's Illuminance Threshold = 780 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas

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RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

CONSTANTS USED IN CALCULATIONS:
        KOSCHMIEDER'S LAW CONSTANTS:
                PILOT'S VISUAL THRESHOLD = 0.050
                TRANSMISSOMETER BASELINE = 250'

        ALLARD'S LAW CONSTANTS:
                TRANSMISSOMETER BASELINE = 250'
                PILOT'S ILLUMINANCE THRESHOLD = 780 MILE CANDLES

                          DAY CONDITIONS

                L.S.3 =   400 CANDELAS
                L.S.4 =   2000 CANDELAS
                L.S.5 = 10000 CANDELAS

KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR
EACH SET OF CONDITIONS. THE EQUATION GIVING THE
HIGHER RVR IS UTILIZED IN THE DERIVATION OF
EACH PRINTED VALUE.

| | ATMOSPHERIC TRANSMITTANCE | | |
RVR	L.S.3	L.S.4	L.S.5
600	.21566459	.11029132	5.6403214E-02
650	.25808735	.13897353	7.4833746E-02
700	.29975914	.16870979	9.4952883E-02
750	.34011811	.19890228	.11631875
800	.37880949	.22908293	.13853662
850	.41432784	.25889748	.16126807
900	.43511372	.28808637	.1842317
950	.45459398	.31646622	.20719911
1000	.4728708	.34391347	.2299888
1050	.49003934	.3703507	.25245951
1100	.50618743	.39573551	.2745037
1150	.52139563	.42005165	.29604157
1200	.53573754	.44330215	.31701593
1250	.54928027	.46550393	.33738778
1300	.5620849	.48668372	.35713261
1350	.57420704	.5068749l	.37623734
1400	.58569729	.52611521	.39469787
1450	.59660169	.54444488	.412517

1500	.60696223	.5619054	.42970282
1550	.61681716	.57853852	.44626742
1600	.62620144	.59438554	.46222579
1650	.63514698	.60948685	.47759502
1700	.64368302	.62388155	.49239364
1750	.65183634	.63760727	.50664108
1800	.6596315	.65069999	.52035727
1850	.66709108	.66319397	.53356233
1900	.67423585	.67423585	.5462763
1950	.68108494	.68108494	.55851899

2000	.68765602	.68765602	.57030981
2050	.69396538	.69396538	.58166768
2100	.7000281	.7000281	.59261096
2150	.70585816	.70585816	.60315739
2200	.7114685	.7114685	.61332407
2250	.71687116	.71687116	.62312742
2300	.7220773	.7220773	.6325832
2350	.72709733	.72709733	.64170649
2400	.73194094	.73194094	.65051172
2450	.73661716	.73661716	.65901267

2500	.74113444	.74113444	.66722249
2550	.74550067	.74550067	.67515371
2600	.74972322	.74972322	.68281828
2650	.753809	.753809	.69022758
2700	.7577645	.7577645	.69739246
2750	.7615958	.7615958	.70432323
2800	.76530862	.76530862	.71102971
2850	.76890832	.76890832	.71752126
2900	.77239995	.77239995	.72380678
2950	.77578829	.77578829	.72989474

3000	.7790778	.7790778	.7357932
3050	.78227274	.78227274	.74150984
3100	.78537708	.78537708	.74705197
3150	.78839461	.78839461	.75242655
3200	.7913289	.7913289	.75764022
3250	.79418333	.79418333	.76269929
3300	.79696109	.79696109	.76760978
3350	.79966522	.79966522	.77237743
3400	.80229859	.80229859	.77700772
3450	.80486392	.80486392	.78150586

3500	.80736382	.80736382	.78587683
3550	.80980074	.80980074	.79012539
3600	.81217701	.81217701	.79425606
3650	.81449487	.81449487	.79827318
3700	.81675644	.81675644	.80218088
3750	.81896372	.81896372	.80598313
3800	.82111865	.82111865	.80968369
3850	.82322307	.82322307	.81328617
3900	.8252787	.8252787	.81679404
3950	.82728724	.82728724	.82021059

4000	.82925027	.82925027	.823539
4050	.83116932	.83116932	.82678228
4100	.83304584	.83304584	.82994333
4150	.83488123	.83488123	.83302494
4200	.83667682	.83667682	.83602977
4250	.83843388	.83843388	.83843388
4300	.84015365	.84015365	.84015365
4350	.84183729	.84183729	.84183729
4400	.84348592	.84348592	.84348592
4450	.84510063	.84510063	.84510063

4500	.84668244	.84668244	.84668244
4550	.84823235	.84823235	.84823235
4600	.84975132	.84975132	.84975132
4650	.85124025	.85124025	.85124025
4700	.85270002	.85270002	.85270002
4750	.85413149	.85413149	.85413149
4800	.85553547	.85553547	.85553547
4850	.85691273	.85691273	.85691273
4900	.85826404	.85826404	.85826404
4950	.85959011	.85959011	.85959011

5000	.86089165	.86089165	.86089165
5050	.86216933	.86216933	.86216933
5100	.8634238	.8634238	.8634238
5150	.86465569	.86465569	.86465569
5200	.86586559	.86586559	.86586559
5250	.86705408	.86705408	.86705408
5300	.86822174	.86822174	.86822174
5350	.86936911	.86936911	.86936911
5400	.8704967	.8704967	.8704967
5450	.87160502	.87160502	.87160502

5500	•87269456	•87269456	•87269456
5550	•8737658	•8737658	•8737658
5600	•87481919	•87481919	•87481919
5650	•87585517	•87585517	•87585517
5700	•87687417	•87687417	•87687417
5750	•87787661	•87787661	•87787661
5800	•87886287	•87886287	•87886287
5850	•87983336	•87983336	•87983336
5900	•88078844	•88078844	•88078844
5950	•88172849	•88172849	•88172849

6000	•88265384	•88265384	•88265384
6050	•88356484	•88356484	•88356484
6100	•88446183	•88446183	•88446183
6150	•88534512	•88534512	•88534512
6200	•88621503	•88621503	•88621503
6250	•88707185	•88707185	•88707185
6300	•88791588	•88791588	•88791588
6350	•8887474	•8887474	•8887474
6400	•88956669	•88956669	•88956669
6450	•89037402	•89037402	•89037402

6500	•89116964	•89116964	•89116964
6550	•89195381	•89195381	•89195381
6600	•89272677	•89272677	•89272677
6650	•89348876	•89348876	•89348876
6700	•89424002	•89424002	•89424002
6750	•89498076	•89498076	•89498076
6800	•89571122	•89571122	•89571122
6850	•89643159	•89643159	•89643159
6900	•89714208	•89714208	•89714208
6950	•89784291	•89784291	•89784291

```
5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTABLES
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19); "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24); "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
121 PRINT TAB(10); "KOSCHMIEDER'S LAW CONSTANTS:"
122 PRINT TAB (15) ; "PILOT'S VISUAL THRESHOLD = 0.050"
123 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
124 PRINT " "
125 PRINT TAB (10) ; "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB (15); "PILOT'S ILLUMINANCE THRESHOLD = 780 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30); "DAY CONDITIONS"
135 PRINT " "
140 PRINT TAB(15); "L.S.3 =    400 CANDELAS"
150 PRINT TAB (15);"L.S.4 =   2000 CANDELAS"
160 PRINT TAB(15) ; "L.S.5 = 10000 CANDELAS"
162 PRINT " "
163 PRINT "KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR"
164 PRINT "EACH SET OF CONDITIONS. THE EQUATION GIVING THE"
165 PRINT "HIGHER RVR IS UTILIZED IN THE DERIVATION OF"
166 PRINT "EACH PRINTED VALUE."
170 PRINT " "
180 PRINT " "
190 PRINT"-----------------------------------------------------------"
200 PRINT " "
210 PRINT TAB(30); "ATMOSPHERIC TRANSMITTANCE"
220 PRINT TAB(6); "RVR" TAB(18); "L.S.3"; TAB(39);"L.S.4";TAB(59);"L.S.5
230 PRINT" "
240 PRINT"-----------------------------------------------------------"
250 PRINT " "
260 READ E,B
270 DATA 780,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284 PRINT " "
285 PRINT"-----------------------------------------------------------"
286 PRINT " "
```

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```
290 T1 = (((E/400)↑(B/V))*((V/5280)↑((B*2)/V)))
300 T2 = (((E/2000)↑(B/V))*((V/5280)↑((B*2)/V)))
310 T3 = (((E/10000)↑(B/V))*((V/5280)↑((B*2)/V)))
320 T4=(0.050)↑(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1;TAB(35);T4;TAB(55);T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 650
620 PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```

TABLE V

Runway Visual Range (RVR) Conversion Table
Computed with Modified Constants

Day Conditions

Pilot's Contrast Threshold = 0.050

Pilot's Illuminance Threshold = 260 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas

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RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

CONSTANTS USED IN CALCULATIONS:
      KOSCHMIEDER'S LAW CONSTANTS:
            PILOT'S VISUAL THRESHOLD = 0.050
            TRANSMISSOMETER BASELINE = 250'

      ALLARD'S LAW CONSTANTS:
            TRANSMISSOMETER BASELINE = 250'
            PILOT'S ILLUMINANCE THRESHOLD = 260 MILE CANDLES

DAY CONDITIONS

      L.S.3 =   400 CANDELAS
      L.S.4 = 2000 CANDELAS
      L.S.5 = 10000 CANDELAS

KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR
EACH SET OF CONDITIONS. THE EQUATION GIVING THE
HIGHER RVR IS UTILIZED IN THE DERIVATION OF
EACH PRINTED VALUE.

| | ATMOSPHERIC TRANSMITTANCE | | |
RVR	L.S.3	L.S.4	L.S.5
600	.1364515	6.9781586E-02	3.5686448E-02
650	.16914475	9.108019E-02	4.9044387E-02
700	.20247527	.11395669	6.4136862E-02
750	.23582473	.13791113	8.0650923E-02
800	.26873266	.16251458	9.8279788E-02
850	.30086901	.18741228	.11673971
900	.33200709	.21231908	.1357784
950	.36200003	.23701134	.15517782

1000	.39076114	.26131772	.17475369
1050	.41824842	.28511028	.19435309
1100	.44445234	.30829634	.21385113
1150	.4693866	.33081157	.23314746
1200	.49308107	.35261402	.25216269
1250	.51557649	.37367935	.27083519
1300	.53692056	.39399683	.28911819
1350	.55716509	.41356617	.30697719
1400	.57636382	.43239497	.32438784
1450	.59457098	.45049672	.34133401

1500	.60696823	.46735917	.35780631
1550	.61651716	.48459311	.37380072
1600	.62620144	.50073139	.38931754
1650	.63514673	.51602746	.40436047
1700	.64363302	.53050775	.41893587
1750	.65183634	.54499571	.43305217
1800	.6596315	.55561675	.44671937
1850	.66709108	.57169542	.45994861
1900	.67423535	.58425574	.47275186
1950	.68108494	.59632038	.48514164

2000	.68765602	.6079137	.49713001
2050	.69396538	.6190556	.50873248
2100	.7000281	.6297675	.51995958
2150	.70585816	.64006934	.53082509
2200	.7114685	.64998015	.54134195
2250	.71687116	.65951811	.5515227
2300	.7220773	.6687005	.56137962
2350	.72709733	.67754376	.57098472
2400	.73194094	.68606359	.58016963
2450	.73661716	.69427478	.58912564

2500	.74113444	.70219147	.59780363
2550	.74550067	.70982703	.60621414
2600	.74972322	.71719416	.6143673
2650	.753809	.72430492	.62227287
2700	.7577645	.73117073	.62994024
2750	.7615958	.73780243	.63737841
2800	.76530862	.74421029	.64459604
2850	.76890832	.75040409	.65160144
2900	.77239995	.75639307	.65840255
2950	.77578829	.76218601	.66500702

3000	.7790778	.76779126	.67142215
3050	.78227274	.77321673	.67765496
3100	.78537708	.77846998	.68371214
3150	.78839461	.78355801	.68960015
3200	.7913289	.78848776	.69532513
3250	.79418333	.79326568	.70089297
3300	.79696109	.79696109	.70630934
3350	.79966522	.79966522	.71157964
3400	.80229859	.80229859	.71670905
3450	.80486398	.80486398	.72170254

3500	.80736382	.80736382	.78656487
3550	.80980074	.80980074	.7313006
3600	.81217701	.81217701	.73591409
3650	.81449487	.81449487	.74040953
3700	.81675644	.81675644	.74479094
3750	.81896372	.81896372	.74906217
3800	.82111865	.82111865	.75322692
3850	.82322307	.82322307	.75728872
3900	.8252787	.8252787	.76125098
3950	.82728724	.82728724	.76511695

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4000	.82925027	.82925027	.76888978
4050	.83116932	.83116932	.77257247
4100	.83304584	.83304584	.77616791
4150	.83488123	.83488123	.77967887
4200	.83667682	.83667682	.78310801
4250	.83843388	.83843388	.78645792
4300	.84015365	.84015365	.78973104
4350	.84183729	.84183729	.79292975
4400	.84348592	.84348592	.79605632
4450	.84510063	.84510063	.79911296

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4500	.84668244	.84668244	.80210176
4550	.84823235	.84823235	.80502477
4600	.84975132	.84975132	.80788394
4650	.85124025	.85124025	.81068115
4700	.85270002	.85270002	.81341821
4750	.85413149	.85413149	.81609688
4800	.85553547	.85553547	.81871885
4850	.85691273	.85691273	.82128573
4900	.85826404	.85826404	.82379909
4950	.85959011	.85959011	.82626044

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5000	.86089165	.86089165	.82867125
50?	.86216933	.86216933	.83103292
51	.8634238	.8634238	.8333468
51?	.86465569	.86465569	N83561422
5200	.86586559	.86586559	.83783642
5250	.86705408	.86705408	.84001465
5300	.86822174	.86822174	.84215007
5350	.86936911	.86936911	.84424383
5400	.8704967	.8704967	.84629704
5450	.87160502	.87160502	.84831076

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5500	.87269456	.87269456	.85028602
5550	.8737658	.8737658	.85222388
5600	.87481919	.87401919	.85412512
5650	.87585517	.87585517	.85599087
5700	.87687417	.87687417	.85782195
5750	.87787661	.87787661	.85961926
5800	.87886287	.87886287	.86138363
5850	.87983336	.87983336	.86311589
5900	.88078844	.88078844	.86481682
5950	.88172849	.88172849	.86648721

6000	.88265384	.88265384	.8681278
6050	.88356484	.88356484	.86973931
6100	.88446183	.88446183	.87132244
6150	.88534512	.88534512	.87287787
6200	.88621503	.88621503	.87440626
6250	.88707185	.88707185	.87590825
6300	.88791588	.88791588	.87738447
6350	.8887474	.8887474	.8788355
6400	.88956669	.88956669	.88026195
6450	.89037402	.89037402	.88166437

6500	.89116964	.89116964	.88304331
6550	.89195381	.89195381	.88439938
6600	.89272677	.89272677	.8857329
6650	.89348876	.89348876	.88704457
6700	.89424002	.89424002	.88833421
6750	.89498076	.89498076	.8896041
6800	.89571122	.89571122	.89085291
6850	.89643159	.89643159	.89208168
6900	.89714208	.89714208	.89329085
6950	.89784291	.89784291	.89448085

```
5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTABLES
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19); "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24); "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
121 PRINT TAB(10); "KOSCHMIEDER'S LAW CONSTANTS:"
122 PRINT TAB (15) ; "PILOT'S VISUAL THRESHOLD = 0.050"
123 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
124 PRINT " "
125 PRINT TAB (10) ; "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB (15); "PILOT'S ILLUMINANCE THRESHOLD = 260 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30); "DAY CONDITIONS"
135 PRINT " "
140 PRINT TAB(15); "L.S.3 =    400 CANDELAS"
150 PRINT TAB (15);"L.S.4 =   2000 CANDELAS"
160 PRINT TAB(15) ; "L.S.5 = 10000 CANDELAS"
162 PRINT " "
163 PRINT "KOSCHMIEDER'S LAW AND ALLARD'S LAW ARE APPLIED FOR"
164 PRINT "EACH SET OF CONDITIONS. THE EQUATION GIVING THE"
165 PRINT "HIGHER RVR IS UTILIZED IN THE DERIVATION OF"
166 PRINT "EACH PRINTED VALUE."
170 PRINT " "
180 PRINT " "
190 PRINT"----------------------------------------------------------"
200 PRINT " "
210 PRINT TAB(30); "ATMOSPHERIC TRANSMITTANCE"
220 PRINT TAB(6); "RVR" TAB(18); "L.S.3"; TAB(39);"L.S.4";TAB(59);"L.S.5
230 PRINT" "
240 PRINT"----------------------------------------------------------"
250 PRINT " "
260 READ E,B
270 DATA 260,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284 PRINT " "
285 PRINT"-------------------------------  --------------------------"
286 PRINT " "
```

```
290 T1 = (((E/400)↑(B/V))*((V/5280)↑((B*2)/V)))
300 T2 = (((E/2000)↑(B/V))*((V/5280)↑((B*2)/V)))
310 T3 = (((E/10000)↑(B/V))*((V/5280)↑((B*2)/V)))
320 T4=(0.050)↑(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1;TAB(35);T4;TAB(55);T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 650
620 PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```

TABLE VI

Runway Visual Range (RVR) Conversion Table
Computed with Modified Constants

Night Conditions

Pilot's Illuminance Threshold = 2.6 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas

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RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

CONSTANTS USED IN CALCULATIONS:

ALLARD'S LAW CONSTANTS:
TRANSMISSOMETER BASELINE = 250'
PILOT'S ILLUMINANCE THRESHOLD = 2.6 MILE CANDLES

NIGHT CONDITIONS

L.S.3 =   400 CANDELAS
L.S.4 =   2000 CANDELAS
L.S.5 = 10000 CANDELAS

RVR	ATMOSPHERIC TRANSMITTANCE L.S.3	L.S.4	L.S.5
600	2.0028342E-02	1.0242536E-02	5.2380543E-03
650	2.8775824E-02	1.5495056E-02	8.3436973E-03
700	3.9091855E-02	2.2001593E-02	1.2382889E-02
750	5.0806897E-02	2.9712054E-02	1.7375714E-02
800	6.3726558E-02	3.853828E-02	2.330581E-02
850	7.7650126E-02	4.8368514E-02	3.0128904E-02
900	9.2382947E-02	5.9079046E-02	3.7781147E-02
950	.10774393	7.0542906E-02	4.6186374E-02

RVR	L.S.3	L.S.4	L.S.5
1000	.12356952	8.2635921E-02	5.5261971E-02
1050	.13971525	9.5240662E-02	6.4923358E-02
1100	.15605573	.10824875	7.5087234E-02
1150	.17248371	.12156206	8.567381E-02
1200	.18890857	.13509302	9.6608238E-02
1250	.20525469	.14876443	.10782143
1300	.22145967	.16250897	.11925045
1350	.23747261	.17626847	.13083855
1400	.25325256	.18999307	.14253506
1450	.26876711	.20364045	.15429504

50

1500	.28399106	.21717492	.16607898
1550	.29890535	.2305667	.1778523
1600	.31349607	.2437912	.189585
1650	.32775361	.25682833	.20125116
1700	.34167194	.26966191	.21282855
1750	.35524801	.28227914	.22429827
1800	.36848121	.29467017	.23564434
1850	.38137292	.30682762	.24685336
1900	.39392616	.31874625	.25791426
1950	.40614524	.33042267	.26881797

2000	.41803552	.341855	.2795572
2050	.42960316	.35304268	.29012621
2100	.44085495	.36398627	.30052063
2150	.45179817	.37468722	.31073724
2200	.46244041	.38514775	.32077385
2250	.47278951	.39537072	.33062917
2300	.48285345	.40535949	.34030266
2350	.49264028	.41511784	.34979443
2400	.50215803	.42464991	.35910517
2450	.51141473	.43396006	.36823604

2500	.52041829	.44305286	.37718859
2550	.52917653	.45193305	.38596474
2600	.53769712	.46060543	.39456667
2650	.54598757	.46907489	.40299682
2700	.55405523	.47734635	.41125782
2750	.56190723	.48542473	.41935243
2800	.56955056	.49331491	.42728358
2850	.57699195	.50102177	.43505427
2900	.58423797	.5085501	.44266757
2950	.59129498	.51590466	.45012662

3000	.59816913	.5230901	.45743458
3050	.60486637	.530111	.46459464
3100	.61139245	.53697185	.47160996
3150	.61775292	.54367705	.47848374
3200	.62395316	.55023087	.48521914
3250	.62999833	.55663752	.49131928
3300	.63589344	.56290107	.49828728
3350	.6416433	.56902549	.50462618
3400	.64725255	.57501466	.51083902
3450	.65272568	.58087234	.51692876

- -

3500	.658067	.58660219	.52289833
3550	.66328066	.59220776	.52875058
3600	.66837069	.5976925	.53448833
3650	.67334093	.60305977	.54011433
3700	.67819511	.6083128	.54563127
3750	.68293683	.61345475	.55104178
3800	.68756953	.61848868	.55634845
3850	.69209655	.62341754	.56155378
3900	.6965211	.62824422	.56666023
3950	.70084626	.6329715	.57167019
4000	.70507504	.63760206	.57658599
4050	.7092103	.64213854	.58140998
4100	.7132548	.64658345	.58614418
4150	.71721124	.65093925	.59079095
4200	.72108218	.65520832	.59535238
4250	.72487012	.65939297	.59983034
4300	.72857744	.66349542	.60422701
4350	.73220647	.66751783	.60854428
4400	.73575944	.6714623	.61278402
4450	.7392385	.67533087	.61694809
4500	.74264574	.67912548	.62103826
4550	.74598316	.68284806	.6250563
4600	.74925271	.68650044	.62900387
4650	.75245625	.69008442	.63288265
4700	.75559561	.69360173	.63669423
4750	.75867252	.69705405	.64044017
4800	.76168867	.70044301	.64412198
4850	.76464571	.7037702	.64774115
4900	.7675452	.70703714	.65129912
4950	.77038868	.71024531	.65479727
5000	.77317762	.71339617	.65823697
5050	.77591345	.7164911	.66161955
5100	.77859754	.71953147	.66494628
5150	.78123125	.72251859	.66821842
5200	.78381586	.72545373	.67143719
5250	.78635262	.72833814	.67460377
5300	.78884274	.73117301	.67771932
5350	.79128741	.73395951	.68078496
5400	.79368775	.73669878	.68380178
5450	.79604486	.73939192	.68677085

5500	.79835982	.74203999	.6896932
5550	.80063367	.74464403	.69256984
5600	.80286739	.74720505	.69540175
5650	.80506196	.74972403	.69818989
5700	.80721833	.75220192	.70093518
5750	.80933741	.75463964	.70363853
5800	.81142008	.75703809	.70630083
5850	.81346721	.75939815	.70892293
5900	.81547962	.76172067	.71150567
5950	.81745814	.76400646	.71404987

6000	.81940353	.76625634	.71655632
6050	.82131657	.76847108	.71902579
6100	.823198	.77065144	.72145905
6150	.82504854	.77279817	.72385682
6200	.82686888	.77491197	.72621982
6250	.8286597	.77699356	.72854875
6300	.83042167	.77904361	.7308443
6350	.83215542	.78106278	.73310712
6400	.83386157	.78305171	.73533786
6450	.83554074	.78501105	.73753716

6500	.83719351	.78694139	.73970564
6550	.83882045	.78884334	.74184388
6600	.84042212	.79071748	.74395249
6650	.84199906	.79256436	.74603202
6700	.8435518	.79438454	.74808305
6750	.84508085	.79617856	.75010611
6800	.8465867	.79794695	.75210173
6850	.84806986	.7996902	.75407044
6900	.84953078	.80140882	.75601274
6950	.85096992	.80310329	.75792913

```
5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTABLES
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19); "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24); "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
124 PRINT " "
125 PRINT TAB (10) ; "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB (15); "PILOT'S ILLUMINANCE THRESHOLD = 2.6 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30); "NIGHT CONDITIONS"
135 PRINT " "
140 PRINT TAB(15); "L.S.3 =    400 CANDELAS"
150 PRINT TAB (15);"L.S.4 =  2000 CANDELAS"
160 PRINT TAB(15) ; "L.S.5 = 10000 CANDELAS"
162 PRINT " "
180 PRINT " "
190 PRINT"----------------------------------------------------------------U
200 PRINT " "
210 PRINT TAB(30); "ATMOSPHERIC TRANSMITTANCE"
220 PRINT TAB(6); "RVR" TAB(18); "L.S.3"; TAB(39);"L.S.4";TAB(59);"L.S.5
230 PRINT" "
240 PRINT"----------------------------------------------------------------U
250 PRINT " "
260 READ E,B
270 DATA 2.6,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284PRINT " "
285 PRINT"----------------------------------------------------------------U
286PRINT " "
```

```
290 T1 = (((E/400)†(B/V))*((V/5280)†((B*2)/V)))
300 T2 = (((E/2000)†(B/V`)*((V/5280)†((B*2)/V)))
310 T3 = (((E/10000)†(B/V))*((V/5280)†((B*2)/V)))
320 T4=(0.050)†(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380`
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490 `
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1; TAB(35);T4;TAB(55); T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 650
620 PRINT TAB(3);V;TAB(15);T1; TAB(35); T2; TAB(55); T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1; TAB(35);T2; TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```

TABLE VII

Runway Visual Range (RVR) Conversion Table
Computed with Modified Constants

Night Conditions

Pilot's Illuminance Threshold = 1.55 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas

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RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

CONSTANTS USED IN CALCULATIONS:

    ALLARD'S LAW CONSTANTS:
        TRANSMISSOMETER BASELINE = 250'
        PILOT'S ILLUMINANCE THRESHOLD = 1.55 MILE CANDLES

NIGHT CONDITIONS

    L.S.3 =   400 CANDELAS
    L.S.4 = 2000 CANDELAS
    L.S.5 = 10000 CANDELAS

| | ATMOSPHERIC TRANSMITTANCE | | |
RVR	L.S.3	L.S.4	L.S.5
600	1.6145233E-02	8.2567059E-03	4.2224966E-03
650	2.3584525E-02	1.2699672E-02	6.8384536E-03
700	3.2498036E-02	1.8290474E-02	1.0294205E-02
750	4.2760436E-02	2.5006454E-02	1.4623863E-02
800	5.421506E-02	3.2786255E-02	1.9827305E-02
850	6.6691593E-02	4.1542409E-02	2.5876901E-02
900	8.0018674E-02	5.1172074E-02	3.2724625E-02
950	9.40322E-02	6.1565459E-02	4.0308593E-02

1000	.10858028	7.261201E-02	4.8558578E-02
1050	.12352581	8.4204693E-02	5.7400393E-02
1100	.13874739	9.6242746E-02	6.6759209E-02
1150	.15413914	.10863329	7.6561942E-02
1200	.16960994	.12129211	8.6738882E-02
1250	.18508225	.13414385	9.7224736E-02
1300	.20049074	.1471218	.10795921
1350	.21578101	.16016747	.11888729
1400	.23090815	.17323003	.12995922
1450	.24583561	.18626563	.14113043

1500	.26053399	.19923672	.1523612
1550	.27498003	.21211143	.16361645
1600	.28915576	.22486288	.17486533
1650	.30304761	.23746867	.18608089
1700	.31664583	.24991025	.19723971
1750	.32994381	.2621725	.20832158
1800	.34293761	.27424325	.21930916
1850	.35562548	.28611292	.23018767
1900	.36800754	.29777414	.24094462
1950	.38008537	.30922145	.25156955

2000	.39186184	.32045107	.26205381
2050	.40334073	.33146059	.27239031
2100	.41452685	.34224881	.28257337
2150	.42542533	.35281558	.29259855
2200	.43604199	.36316159	.30246247
2250	.446383	.37323825	.31216268
2300	.45645479	.38319759	.32169756
2350	.46626398	.39289215	.3310662
2400	.47581731	.40237488	.3402683
2450	.4851216	.41164907	.34930409

2500	.49418366	.42071828	.35817427
2550	.5030103	.42958629	.36687991
2600	.51160826	.43825703	.37542245
2650	.5199842	.44673459	.38380357
2700	.52814467	.45502311	.39202522
2750	.53609611	.46312681	.40008954
2800	.54384481	.47104994	.40799883
2850	.55139693	.47879674	.41575552
2900	.55875847	.48637146	.42336217
2950	.56593528	.49377832	.43082141

3000	.57293303	.5010215	.43813592
3050	.57975725	.50810511	.44530845
3100	.58641329	.51503324	.45234179
3150	.59290635	.52180988	.45923871
3200	.59924147	.52843896	.46600201
3250	.6054235	.53492433	.4726345
3300	.61145716	.54126976	.47913896
3350	.61734703	.54747394	.48551816
3400	.62309749	.55355547	.49177483
3450	.62871282	.55950287	.49791168

3500	.63419714	.56532455	.5039314
3550	.63955442	.57102387	.50983661
3600	.64478849	.57660406	.51362992
3650	.64990309	.58206829	.52131387
3700	.65490177	.58741964	.52689097
3750	.65978802	.5926611	.53236368
3800	.66456515	.59779558	.53773441
3850	.66923641	.6028259	.54300551
3900	.67380491	.6077548	.5481793
3950	.67827364	.61258496	.55325802

4000	.68264551	.61731895	.5582439
4050	.68692332	.6219593	.56313908
4100	.69110979	.62650843	.56794568
4150	.69520751	.63096872	.57266574
4200	.69921903	.63534246	.57730128
4250	.70314676	.63963187	.58185426
4300	.70699307	.64383913	.58632657
4350	.71076023	.64796632	.59072009
4400	.71445045	.65201548	.59503663
4450	.71806583	.65598858	.59927796

4500	.72160844	.65988755	.6034458
4550	.72508025	.66371423	.60754183
4600	.72848319	.66747044	.61156769
4650	.73181911	.67115791	.61552498
4700	.73508961	.67477836	.61941524
4750	.738297	.67833342	.62324
4800	.74144239	.68182469	.62700071
4850	.74452758	.68525373	.63069883
4900	.74755414	.68862204	.63433574
4950	.7505236	.69193108	.63791281

5000	.75343743	.69518227	.64143136
5050	.75629705	.698377	.64489269
5100	.75910383	.70151659	.64829805
5150	.76185912	.70460235	.65164866
5200	.76456421	.70763554	.65494572
5250	.76722035	.71061739	.6581904
5300	.76982876	.71354907	.66138381
5350	.7723906	.71643176	.66452707
5400	.77490703	.71926657	.66762125
5450	.77737914	.7220546	.67066739

5500	.77980801	.7247969	.67366652
5550	.78219467	.72749451	.67661961
5600	.78454015	.73014843	.67952765
5650	.7868454	.73275963	.68239158
5700	.78911139	.73532907	.6852123
5750	.79133903	.73785765	.68799073
5800	.79352922	.74034629	.69072772
5850	.79568282	.74279585	.69342414
5900	.79780067	.74520717	.6960808
5950	.79988361	.74758109	.69869851

6000	.8019324	.7499184	.70127808
6050	.80394784	.75221989	.70382025
6100	.80593067	.75448632	.70632578
6150	.80788161	.75671843	.70879541
6200	.80980138	.75891693	.71122983
6250	.81169067	.76108253	.71362976
6300	.81355013	.76321591	.71599586
6350	.81538043	.76531774	.7183288
6400	.8171822	.76738867	.72062921
6450	.81895604	.76942932	.72289774

6500	.82070256	.77144031	.725135
6550	.82242234	.77342224	.72734157
6600	.82411595	.7753757	.72951806
6650	.82578394	.77730125	.73166503
6700	.82742684	.77919944	.73378303
6750	.82904518	.78107083	.73587262
6800	.83063946	.78291594	.73793431
6850	.83221019	.78473527	.73996865
6900	.83375783	.78652934	.74197612
6950	.83528287	.78829863	.74395722

```
5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTABLES
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19); "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24); "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
124 PRINT " "
125 PRINT TAB (10) ; "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB (15); "PILOT'S ILLUMINANCE THRESHOLD = 1.55 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30); "NIGHT CONDITIONS"
135 PRINT " "
140 PRINT TAB(15); "L.S.3 =   400 CANDELAS"
150 PRINT TAB (15);"L.S.4 =  2000 CANDELAS"
160 PRINT TAB(15) ; "L.S.5 = 10000 CANDELAS"
162 PRINT " "
180 PRINT " "
190 PRINT"----------------------------------------------------------------W
200 PRINT " "
210 PRINT TAB(30); "ATMOSPHERIC TRANSMITTANCE"
220 PRINT TAB(6); "RVR" TAB(18); "L.S.3"; TAB(39);"L.S.4";TAB(59);"L.S.5
230 PRINT" "
240 PRINT"----------------------------------------------------------------W
250 PRINT " "
260 READ E,B
270 DATA 1.55,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284PRINT " "
285 PRINT"------------------------------------------           ..
```

```
286PRINT " "
290 T1 = (((E/400)!(B/V))*((V/5280)!((B*2)/V)))
300 T2 = (((E/2000)!(B/V))*((V/5280)!((B*2)/V)))
310 T3 = (((E/10000)!(B/V))*((V/5280)!((B*2)/V)))
320 T4=(0.050)!(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1;TAB(35);T4;TAB(55);T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 6:0
620 PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```

TABLE VIII

Runway Visual Range (RVR) Conversion Table
Computed with Modified Constants

Night Conditions

Pilot's Illuminance Threshold = 0.26 mile candles

Transmissometer Baseline = 250'

L.S. 3 = 400 candelas

L.S. 4 = 2000 candelas

L.S. 5 = 10000 candelas

RUNWAY VISUAL RANGE (RVR)
CONVERSION TABLE

CONSTANTS USED IN CALCULATIONS:

ALLARD'S LAW CONSTANTS:
TRANSMISSOMETER BASELINE = 250'
PILOT'S ILLUMINANCE THRESHOLD = .26 MILE CANDLES

NIGHT CONDITIONS

L.S.3 =   400 CANDELAS
L.S.4 =   2000 CANDELAS
L.S.5 =   10000 CANDELAS

| | ATMOSPHERIC TRANSMITTANCE | | |
RVR	L.S.3	L.S.4	L.S.5

600	7.6732321E-03	3.9241069E-03	2.0067964E-03
650	1.1868952E-02	6.3911318E-03	3.4414634E-03
700	1.7176846E-02	9.6674354E-03	5.4410051E-03
750	2.3582473E-02	1.3791113E-02	8.0650923E-03
800	3.1032764E-02	1.8766891E-02	1.1349172E-02
850	3.9447957E-02	2.457226E-02	1.530614E-02
900	4.8731977E-02	3.1164179E-02	1.9929544E-02
950	5.8780723E-02	3.8485351E-02	2.5197414E-02

1000	6.948825E-02	4.6469593E-02	3.107609E-02
1050	8.0751127E-02	5.5046177E-02	3.7523707E-02
1100	9.2471311E-02	6.4143137E-02	4.4493173E-02
1150	.10455788	7.3689698E-02	5.1934598E-02
1200	.11692794	8.3617962E-02	5.9797197E-02
1250	.12950695	9.386401E-02	6.8030726E-02
1300	.1422286	.10436855	7.6586522E-02
1350	.15503449	.11507724	8.5418229E-02
1400	.1678736	.12594077	9.4482261E-02
1450	.18070173	.13691475	.10373807

1500	.19348085	.14795955	.11314829
1550	.20617849	.15903996	.1226787
1600	.21876714	.17012496	.13229821
1650	.23122369	.18118731	.14197871
1700	.24352889	.19220327	.15169493
1750	.2556669	.20315225	.16142425
1800	.26762486	.21401651	.17114654
1850	.27939248	.22478085	.18084392
1900	.29096173	.23543235	.19050062
1950	.30232652	.24596012	.2001028

2000	.31348241	.25635508	.20963832
2050	.32442644	.26660973	.21909666
2100	.33515685	.27671798	.22846868
2150	.34567295	.28667499	.23774655
2200	.35597493	.296477	.24692359
2250	.36606375	.30612119	.25599416
2300	.375941	.31560559	.26495351
2350	.3856088	.32492896	.27379777
2400	.39506972	.33409069	.28252377
2450	.40432669	.3430907	.291129

2500	.41338294	.3519294	.29961155
2550	.42224193	.36060761	.30797
2600	.43090731	.36912648	.31620341
2650	.43938288	.37748749	.32431124
2700	.44767255	.38569234	.33229329
2750	.45578028	.39374296	.34014969
2800	.46371011	.40164145	.34788082
2850	.47146608	.40939006	.35548734
2900	.47905225	.41699116	.36297007
2950	.48647265	.42444721	.37033004

3000	.4937313	.43176075	.37756842
3050	.50083218	.43893438	.38468653
3100	.5077792	.44597073	.39168578
3150	.51457624	.45287247	.39856771
3200	.5212271	.45964226	.40533389
3250	.52773551	.4662828	.41198601
3300	.53410515	.47279676	.41852579
3350	.5403396	.47918681	.42495497
3400	.54644236	.48545559	.43127537
3450	.5524168 7	.49160572	.43748879

3500	.55826646	.4976398	.44359708
3550	.56399441	.50356039	.44960209
3600	.56960389	.50937	.45550566
3650	.57509801	.51507112	.46130966
3700	.58047977	.5206662	.46701598
3750	.58575212	.52615762	.47262628
3800	.5909179	.53154774	.47814257
3850	.59597991	.53683887	.48356659
3900	.60094063	.54203326	.48890015
3950	.60580328	.54713313	.494145

4000	.61056983	.55214064	.4993029
4050	.61524294	.5570579	.50437557
4100	.61982501	.56188699	.50936471
4150	.62431838	.56662991	.51427199
4200	.62872533	.57128865	.51909906
4250	.63304804	.57586513	.52384753
4300	.63728865	.58036123	.528519
4350	.64144924	.58477878	.53311502
4400	.64553183	.58911958	.53763712
4450	.64953836	.59338536	.54208682

4500	.65347073	.59757782	.54646557
4550	.65733078	.60169863	.55077482
4600	.6611203	.6057494	.55501599
4650	.66484103	.60973171	.55919045
4700	.66849465	.61364709	.56329957
4750	.67208279	.61749704	.56734467
4800	.67560703	.62128301	.57132705
4850	.67906893	.62500642	.57524797
4900	.68246998	.62866867	.57910869
4950	.68581162	.63227109	.58291041

5000	.68909528	.635815	.58665432
5050	.69232231	.63930169	.59034158
5100	.69549405	.64273239	.59397334
5150	.6986118	.64610832	.59755069
5200	.70167681	.64943067	.60107473
5250	.70469029	.65270059	.60454651
5300	.70765344	.65591919	.60796707
5350	.7105674	.65908758	.61133742
5400	.7134333	.66220683	.61465856
5450	.71625222	.66527797	.61793144

5500	.71902523	.66830201	.62115702
5550	.72175334	.67127994	.62433622
5600	.72443756	.67421272	.62746994
5650	.72707886	.67710129	.63055905
5700	.72967819	.67994657	.63360443
5750	.73223647	.68274944	.63660692
5800	.73475458	.68551077	.63956732
5850	.73723341	.68823142	.64248646
5900	.73967379	.6909122	.64536511
5950	.74207656	.69355391	.64820405

6000	.74444251	.69615735	.65100401
6050	.74677242	.69872328	.65376574
6100	.74906706	.70125245	.65648994
6150	.75132717	.70374558	.65917733
6200	.75355345	.70620338	.66182858
6250	.75574663	.70862655	.66444436
6300	.75790737	.71101576	.66702532
6350	.76003635	.71337168	.66957211
6400	.76213422	.71569494	.67208535
6450	.7642016	.71798617	.67456564

6500	.76623911	.72024599	.67701359
6550	.76824735	.722475	.67942978
6600	.77022691	.72467373	.68181478
6650	.77217835	.7268429	.68416915
6700	.77410224	.72898292	.68649348
6750	.77599911	.73109438	.68878815
6800	.77786949	.73317781	.69105384
6850	.7797139	.73523373	.69329101
6900	.78153284	.73726265	.69550016
6950	.7833268	.73926506	.69768177

69

```
     1500          .19348085               .14795955
>LIST

5 REM RVR CONVERSION TABLE PROGRAM - FILE NAME RVRTABLES
10 PRINT " "
20 PRINT " "
30 PRINT TAB(19); "RUNWAY VISUAL RANGE (RVR)"
40 PRINT TAB(24); "CONVERSION TABLE"
50 PRINT " "
60 PRINT " "
70 PRINT " "
100 PRINT " "
110 PRINT " "
120 PRINT "CONSTANTS USED IN CALCULATIONS:"
124 PRINT " "
125 PRINT TAB (10) ; "ALLARD'S LAW CONSTANTS:"
126 PRINT TAB (15); "TRANSMISSOMETER BASELINE = 250'"
130 PRINT TAB (15); "PILOT'S ILLUMINANCE THRESHOLD = .26 MILE CANDLES"
131 PRINT" "
133 PRINT TAB(30); "NIGHT CONDITIONS"
135 PRINT " "
140 PRINT TAB(15); "L.S.3 =    400 CANDELAS"
150 PRINT TAB (15);"L.S.4 =   2000 CANDELAS"
160 PRINT TAB(15) ; "L.S.5 = 10000 CANDELAS"
162 PRINT " "
180 PRINT " "
190 PRINT"-------------------------------------------------------------"
200 PRINT " "
210 PRINT TAB(30); "ATMOSPHERIC TRANSMITTAN'E"
220 PRINT TAB(6); "RVR" TAB(18); "L.S.3"; TAB(39);"L.S.4";TAB(59);"..C.."
230 PRINT" "
240 PRINT"-------------------------------------------------------------"
250 PRINT " "
260 READ E,B
270 DATA .26,250
280 FOR V = 600 TO 7000 STEP 50
282 IF (V/500)-INT(V/500)<>0 THEN 290
284 PRINT " "
285 PRINT"-------------------------------------------------------------"
```

```
286PRINT " "
290 T1 = (((E/400)†(B/V))*((V/5280)†((B*2)/V)))
300 T2 = (((E/2000)†(B/V))*((V/5280)†((B*2)/V)))
310 T3 = (((E/10000)†(B/V))*((V/5280)†((B*2)/V)))
320 T4=(0.050)†(B/V)
325 LET X = T4-T1
326 LET Y = T4-T2
330 LET Z = T4-T3
340 IF X<0 GO TO 360
350 IF X>0 GO TO 520
360 IF Y <0 GO TO 380
370 IF Y>0 GO TO 450
380 IF Z>0 GO TO 420
390 PRINT TAB(3);V;TAB(15);T4;TAB(35);T4; TAB(55);T4
400 NEXT V
410 GO TO 260
420 PRINT TAB(3);V; TAB(15);T4;TAB(35);T4;TAB(55);T3
430 NEXT V
440 GO TO 260
450 IF Z>0 GO TO 490
460 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
470 NEXT V
480 GO TO 260
490 PRINT TAB(3);V; TAB(15);T4;TAB(35);T2;TAB(55);T3
500 NEXT V
510 GO TO 260
520 IF Y<0 GO TO 540
530 IF Y>0 GO TO 610
540 IF Z>0 GO TO 580
550 PRINT TAB (3);V ;TAB(15);T1;TAB(35);T4;TAB(55);T4
560 NEXT V
570 GO TO 260
580 PRINT TAB(3);V;TAB(25);T1;TAB(35);T4;TAB(55);T3
590NEXT V
600 GO TO 260
610 IF Z>0 GO TO 650
620 PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T4
630 NEXT V
640 GO TO 260
650PRINT TAB(3);V;TAB(15);T1;TAB(35);T2;TAB(55);T3
660 NEXT V
670 GO TO 260
680 END
690 REM IF PILOT'S VISUAL THRESHOLD IS CHANGED MODIFY 122, 320
700 REM IF PILOT'S ILLUMINANCE THRESHOLD IS CHANGED MODIFY 130,133,270
710 REM IF BASELINE IS CHANGED MODIFY 123, 126, 270
720 REM IF STEP INCREMENTS ARE CHANGED MODIFY 280; CHECK 282
```